Amendments to the Claims:

19. (Currently Amended) An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising a first and a second electrode, wherein said first electrode comprises a single stranded nucleic acid covalently attached to said electrode via ~~a spacer~~ an insulator, wherein said first electrode further comprises a passivation agent monolayer; and

b) an AC/DC voltage source electrically connected to said first and second ~~measuring~~ electrodes.

20. (Currently Amended) An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising a first and a second electrode, wherein said first electrode comprises a covalently attached single stranded nucleic acid attached to said first electrode via an insulator, wherein said first electrode further comprises a passivation agent monolayer and wherein said nucleic acid further comprises a covalently attached first electron transfer moiety; and

b) an AC/DC voltage source electrically connected to said test chamber.

21. (Currently Amended) An apparatus according to claim 19, 20 or 26, further comprising:

~~d)~~ a processor coupled to said electrodes.

22. (Currently Amended) An apparatus according to claim 19, 20 or 26, wherein said AC/DC voltage source is capable of delivering frequencies from between about 1 Hz to about 100 kHz.

26. (Currently Amended) An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising a first and a second electrode, wherein said first electrode comprises a covalently attached first single stranded nucleic acid attached to said first electrode via an insulator and a passivation agent monolayer;

b) a second nucleic acid covalently attached to an electron transfer moiety; and

c) an AC/DC voltage source electrically connected to said test chamber.

33. (Previously Amended) An apparatus according to claim 19, 20 or 26 wherein said passivation agent monolayer comprises conductive oligomers.

34. (Previously Amended) An apparatus according to claim 19, 20 or 26 wherein said passivation agent monolayer comprises insulators.

35. (Currently Amended) An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising an array of electrodes, each electrode comprising a covalently attached single stranded nucleic acid, attached to said electrodes via an insulator and a passivation agent monolayer; and

b) an AC/DC voltage source electrically connected to said test chamber.

39. (Previously Added) An apparatus according to claim 35 wherein said passivation agent monolayer comprises conductive oligomers.

40. (Previously Added) An apparatus according to claim 35 wherein said passivation agent monolayer comprises insulators.

41. (Newly Added) An apparatus accordingly to claim 19 further comprising,

c) a second nucleic acid covalently attached to an electron transfer moiety.

42. (New) An apparatus according to claims 19, 20 or 26 wherein said passivation agent monolayer comprises alkyl chains.

43. (New) An apparatus according claim 42 wherein said alkyl chains have the formula C_nH_x, where n is 1 to 30, and x is 2(n).

44. (New) An apparatus according to claims 19, 20 or 26 wherein said passivation agent monolayer comprises terminal groups chosen from the group consisting of $-(CH_2)_n-$, $-(CRH)_n-$, $-(CR2)_n-$, ethylene glycol and ethylene glycol derivatives using other heteroatoms in place of oxygen; wherein n is greater than 1.

45. (New) An apparatus according to claims 19, 20 or 26 wherein said passivation agent monolayer comprises both conductive oligomers and insulators.